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Rennie, John
Report on the pier

TC 357
R41

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THE REPORT
OF
SIR JOHN RENNIE
ON
THE PIER,

PROPOSED TO BE ERECTED

AT DEAL

IN THE COUNTY OF KENT.

PRESENTED NOVEMBER 23rd, 1837.

J. KING, PRINTER, COLLEGE HILL, CITY.

1838.

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TO THE COMMITTEE,

*Appointed to consider the propriety and
practicability of erecting a Landing
Pier or Jetty, at Deal.*

LONDON, NOVEMBER 23rd, 1837.

GENTLEMEN,

In consequence of your Resolution of the 5th ultimo, requesting me to consider the practicability of making a Landing Jetty or Pier at Deal, viz.—

“ That it be referred to Sir John Rennie to
“ report upon the practicability of erecting
“ a Pier at Deal, the plan upon which
“ the same should be formed, and the
“ probable expense thereof, and that he
“ be requested to communicate with the
“ Committee at his earliest convenience.”

I have accordingly taken the subject into consideration, and in order to render it more clear

and comprehensive, I have divided the subject into the following branches.—

1st. The nature of the coast, as also the winds, tides, currents, and soundings in front of, and adjoining the Town of Deal.

2nd. The practicability and most advisable situation, together with a plan and estimate of the proposed Pier or Jetty.— and

3rd. The advantages and probable results which may be anticipated from carrying the above measure into effect.

With respect to the first, I proceeded to Deal and directed a survey to be made of the town and sea coast in front of it, between Deal and Sandown Castles, together with a chart of the soundings, tides, and currents, comprehended between these points, and which accompanies this Report. From this chart and survey it appears that the whole front, or sea side of the Town of Deal, is more or less exposed to all winds from the North Foreland,—round by east to the South Foreland,—or one half of the compass; but as the Goodwin Sands form a great natural breakwater, (under

cover of which is the well known anchorage called the Downs), between the north east and south east, or eight points strictly speaking, the most exposed quarters are only from north to north east, and south east to south, or about eight points, but as gales from these quarters are frequent and severe, the Town of Deal and anchorage in the Downs is still much exposed, and during gales a heavy sea sets in which nothing but the best anchors and cables can withstand, and rolling along the shore breaks upon the beach with accumulated violence, producing such a surf that it is extremely dangerous to embark or land, even when attended with the skilful boatmen of Deal ; moreover, from the quarter of the Goodwin a considerable swell occurs at high water, as well as from the north east, which at times is particularly severe.

Spring tides occur two days after the full and change of the moon, at 11 20 p. m., and rise from 16 to 18 feet ; neap tides rise from 10 to 12 feet.

The tide upon an average ebbs about 100 feet from high water mark, at springs, and about 70 or 80 at neaps. The space between them is composed

for the most part of moving beach ; but from low water mark seaward, the bottom is mostly sand, mixed with chalk and shells.

The soundings increase gradually seaward, and at about 100 yards from the shore there is from six to seven feet at low water, and at 300 yards there is three fathoms.

The current about a mile from the shore commences setting to the N. E., half north, one hour thirty minutes before high water on the shore, and runs in that direction five hours and a half ; it then turns and sets to the S. W., half south, about seven hours, attaining a velocity of from two and a half to three knots or miles per hour at springs, and a proportionable reduction at neaps ; there is also an eddy or still water between the currents and the shore, although this is of minor importance.

Such being the state of the winds, tides, currents, and soundings, it also becomes necessary to make a few remarks upon the nature of the beach or shingle, which necessarily involves much consideration in the formation of any design for a Pier or Harbour at Deal. This singular phenomenon,

for such it may be termed, consists, as is well known, chiefly of a mass of flint, chalk, and other pebbles, washed from the cliffs and shore of the surrounding coast by the action of the sea, land springs, and other causes, which becoming rounded by continual attrition against each other, and being impelled along the shore between the lines of high and low water mark, by the action of the waves in a progressive direction from the westward, except where they are partially checked by east winds, (for it is evident that these movements are influenced mostly by the impetus of the waves), and accumulate in large masses on the shores and against whatever obstructs their progress, until having filled up the angles presented by obstacles, the succeeding masses are again brought within the line of action of the waves, when they proceed onwards as before. This constant travelling or progression of the beach along the shore ceases after reaching the vicinity of Shellness Point, at the entrance to Sandwich Haven, when it takes a seaward direction and is perceived no more.

The angle or slopes at which the beach lies, varies more or less according to the violence of the winds or waves, but increases from low to high

water from seven and one, to almost perpendicular; the size of the pebbles vary also, the largest being generally found near high water.

Between Walmer and Deal the beach has accumulated to about 100 yards wide, and between the south end of Deal and Sandown Castle to the same extent; between the above two bays or depôts of beach, the town of Deal is situated, bordering upon high water mark, from thence to low water spring tides there is a space of about 100 feet, which is composed of beach and the remainder of sand, laying almost horizontally, as the soundings will shew.

From the above statement of facts, connected with the local position of Deal, the following conclusions may be drawn; first, from the heavy sea which breaks upon the beach, any Pier or Jetty, to give the desired protection, must possess a proportionable degree of stability;—and

Secondly,—The Pier or Jetty should be so constructed as to prevent the beach or shingle from becoming injurious.

With regard to the second head of this Report,

the position of the intended Pier is a matter of local convenience, and as such the centre of the town claims much consideration, for in that case the advantages, whatever they may be, would be as nearly as possible distributed equally among the inhabitants, at whose expense the Pier is, I understand, to be erected ; whereas, if constructed towards either end of the town, that portion which is nearest to it would be most benefited at the expense of the other. Viewing the question therefore in this light, it will be seen that assuming Deal Castle as the southern boundary of the town, on the one side, and 200 yards north of the coast guard station as the other, the centre point between these, falls as nearly as possible between the Royal Hotel and the Adelaide Baths, and as the intermediate buildings are of a very ordinary description, the expense of removing them would not be very considerable; and an ample space of about 200 feet would be left for the approaches to the Pier, and Oak-street being immediately opposite would form an excellent access when properly widened to correspond with the increased traffic which would have to pass through it. The depth of water and sea approach is equally good

as at any other part of the front of the centre of the town. If the Pier be built further to the southward, it would then be more exposed to the south east gales, in consequence of its being less within the protection offered by the Goodwin Sands, and if the Pier be constructed more to the north, the soundings are not so good, and in either of the two latter cases it would not be so accessible to the other parts of the town. For these reasons therefore the central point above mentioned, or the esplanade, (taking all the circumstances into consideration) appear to possess the greatest number of advantages with the fewest disadvantages, and therefore one of the two above named places should be adopted.

The next important question is the kind and extent of Pier or Jetty which should be adopted, and first with regard to the kind of Pier. From what has been stated above, regarding the nature of the beach, it is evident that it is desirable to interfere with its progress as little as possible, otherwise the accumulation would in a short time, render other expensive measures necessary in order to prevent it from becoming injurious; for this purpose, therefore, it would be advisable, at

present, that the Pier or Jetty should be so constructed as to allow the beach to continue its progressive motion unobstructed for the extent between high and low water mark, or until the commencement of the sandy bottom. In order to effect this, the Pier should be constructed with openings, having at its seaward extremity a proper head, accessible to steam boats for landing and embarking goods and passengers.

If the Pier be merely intended to be approached in moderate weather, then the head may be constructed open as well as the other part; if intended to be accessible at all times, during a heavy sea and stormy weather, then it will be necessary that the return head should be solid to a certain extent, so as to give the desired protection; again, if it be desired to approach it at all times of the tide, the head ought to be founded in at least 9 feet at low water, and the Pier in that case would require to be 900 feet long; if only to be accessible at half tides 500 feet would suffice, and if at high water of neap tides only, a length of 200 feet would be sufficient. The design capable of giving protection, and to be accessible at all times would no doubt be the most useful and

desirable, but then it would necessarily involve a heavy expense, and far greater than I understand it to be your intention to incur. I have therefore confined my views to the construction of a Jetty or Pier in about 4 feet at low water, of ordinary tides, and accessible only in moderate weather; a work of this description would require to be about 250 feet long, and would be accessible to the ordinary sized steam boats drawing 7 feet water, (which is about the usual draft of vessels of that description, frequenting this coast,) at the first and last quarters of the flood and ebb,—this would, I understand, be sufficient to meet your views in the outset,—as regards the kind of structure, it may either be made of wood, or a Chain-Pier, or of cast iron.

The first would be cheapest in the outset, but by no means so durable, and if carried to the extent of 250 feet would cost £12,500

The second would be more costly, but the third would upon the whole be most durable and substantial, and as such I should recommend it in preference to either of the former, the cost would be £17,900, and the work would be of such

a description as to be worthy of extension, should it ever be desired to advance it further seaward, in order to render it available at all times of tide.

With regard to the third division of the Report, the advantage of a Pier to the Town of Deal, and the numerous fleets which constantly frequent the Downs must be obvious, and it is a matter of surprise that something like a work of this description has not been resorted to long ago; for the danger and difficulty of landing through the heavy surf, which rolls along the beach, as well as embarking anchors and other articles in order to render assistance to the various vessels which are frequently in distress in the Downs, and perishing on the Goodwin Sands, are proverbial and call loudly for a remedy. True it is, that the greater the difficulties and obstacles which nature interposes in our way, frequently produce a corresponding vigour and skill to overcome them, and in no instance is this more exemplified than at Deal, of which Town the boatmen stand unrivalled. By launching their boats through the surf, and landing them again by means of their windlasses, with which the shore is lined, thereby relieving vessels in distress, which would otherwise inevitably

be lost, they display a degree of courage, activity, and skill, in overcoming difficulties and dangers, which is almost incredible; nevertheless frequent and melancholy accidents occur, attended by loss of life and property, which it is extremely desirable to avoid, and the only remedy is a suitable Landing-Pier; indeed this has long been felt, and ever since the time of Queen Elizabeth various plans for an Asylum Harbour and Landing Pier, in the neighbourhood of Deal, have been proposed, as may be seen from the different Reports of Messrs. Labéle, Smeaton, Rennie, Telford, Whidby, and others, and more recently by the late Earl of Liverpool, when Lord Warden of the Cinque Ports in 1825, who was extremely desirous that some plan should be devised for the protection of boats and other small craft belonging to Deal. These plans have from various causes never been carried into effect, although every person at all aware of the danger of the coast, is fully conscious of the necessity and importance of providing a remedy, and although a small Jetty of the kind above described, is not calculated to meet every exigency of the case, it would, nevertheless, be of considerable advantage in accommodating

the various steam boat passengers, who, from the want of it, are compelled to proceed elsewhere ; whereas the environs of Deal and Walmer present equal inducements for sea bathing and residence as many others along the coast, but which now are more frequented in consequence of the superior facility of access ; but when once such a Jetty shall have been established at Deal, its advantages would become so apparent, that it would be followed by a work upon a more extended scale, capable of giving shelter to boats, and probably vessels of a larger class, during all times of tide and weather, by which a great loss of life and property would be avoided, and thus prove of the greatest benefit, to the immense number of vessels of all classes and nations, which frequent this dangerous coast.

I am, Gentlemen,

Your obedient humble Servant,

JOHN RENNIE.



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